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BUREAU OF MINES MINERALS YEARBOOK

The Mineral Industry of Alabama

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UNITED STATES DEPARTMENT OF THE INTERIOR • Donald Paul Hodel, Secretary

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Alabama

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Geological Survey of Alabama for collecting information on all nonfuel minerals.

By James R. Boyle[1] and Ernest A. Mancini[2]

The value of Alabama's nonfuel mineral production in 1984 was $409.8 million, and established a new record high for value of nonfuel minerals in the State, at 13.4% over the previous high of 1983. Output of nearly all nonfuel minerals increased; phosphate rock was one of the exceptions, with no recorded output in 1984. Cement, crushed stone, lime, sand and gravel, and clays were the major commodities produced in Alabama.

Alabama led the Nation in the production of crushed marble; was second in bauxite; third in fire clay and kaolin; fourth in bentonite, ferroalloys, and dimension marble; fifth in masonry cement, lime, and recovered sulfur; and sixth in portland cement. Alabama ranked 22d in the Nation in value of nonfuel minerals produced.

Table 1.—Nonfuel mineral production in Alabama[1]

Mineral		1983		1984	
		Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:					
Masonry	thousand short tons	210	$13,417	259	$17,247
Portland	do.	3,279	150,255	3,656	167,191
Clays[2]	do.	1,863	20,758	1,906	30,500
Gem stones		NA	1	NA	1
Lime	thousand short tons	981	41,149	1,163	50,560
Sand and gravel:					
Construction	do.	e8,600	e23,500	10,348	26,188
Industrial	do.	418	3,256	442	3,600
Stone:					
Crushed	do.	20,558	95,374	e22,000	e98,500
Dimension	do.	7	2,661	e8	e2,674
Combined value of bauxite, clays (bentonite), phosphate rock (1983), and salt		XX	r10,956	XX	13,380
Total		XX	r361,327	XX	409,841

eEstimated. rRevised. NA Not available. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Excludes bentonite; value included with "Combined value" figure.

Table 2.—Value of nonfuel mineral production in Alabama, by county[1]

(Thousands)

County	1982	1983	Minerals produced in 1983 in order of value
Autauga	W	(2)	
Baldwin	W	W	Clays.
Barbour	W	W	Clays, bauxite.
Bibb	W	W	Clays.
Blount	W	W	Stone (dimension).
Calhoun	W	$5,310	Stone (crushed), clays.
Chilton	W	106	Clays.
Clarke	W	(2)	
Coffee	W	(2)	
Colbert	$45	7,214	Stone (crushed).
Coosa	(2)	W	Do.
Crenshaw	37	51	Sand and gravel (industrial).
Dale	W	(2)	
Dallas	1,618	W	Sand and gravel (industrial), clays.
De Kalb	(2)	654	Stone (crushed).
Elmore	2,156	398	Clays.
Escambia	637	(2)	
Etowah	270	W	Stone (crushed).
Fayette	190	(2)	
Franklin	1,092	W	Stone (dimension), stone (crushed).
Geneva	W	(2)	
Hale	W	(2)	
Henry	W	W	Clays, bauxite.
Jackson	(2)	W	Stone (crushed).
Jefferson	W	W	Cement, stone (crushed), clays.
Lawrence	(2)	701	Stone (crushed).
Lee	(2)	W	Do.
Limestone	W	W	Phosphate rock.
Lowndes	W	W	Clays.
Macon	W	W	Sand and gravel (industrial).
Madison	W	W	Stone (crushed), clays.
Marengo	W	W	Cement.
Marion	275	(2)	
Marshall	W	W	Stone (crushed), clays.
Mobile	29,900	W	Cement, clays, sand and gravel (industrial).
Monroe	(2)	W	Stone (crushed).
Montgomery	W	(2)	
Morgan	(2)	W	Stone (crushed).
Randolph	(2)	170	Do.
Russell	W	W	Clays.
St. Clair	W	W	Cement, stone (crushed), clays.
Shelby	W	93,044	Lime, cement, stone (crushed), clays.
Sumter	W	W	Clays, stone (crushed).
Talladega	(2)	W	Stone (crushed), stone (dimension).
Tuscaloosa	W	W	Sand and gravel (industrial).
Walker	W	W	Clays.
Washington	W	W	Salt.
Wilcox	(2)	(2)	
Undistributed[4]	171,247	230,179	
Sand and gravel (construction)	XX	e23,500	
Stone:			
Crushed	e89,600	XX	
Dimension	r e2,094	XX	
Total	r 5299,162	361,327	

eEstimated. rRevised. W Withheld to avoid disclosing company proprietary data; included with "Undistributed." XX Not applicable.

[1]No production of nonfuel mineral commodities was reported for counties not listed.

[2]Construction sand and gravel was produced; data not available by county. Total State value is shown separately under "Sand and gravel (construction)."

[3]Crushed and dimension stone was produced; data not available by county. Total State values are shown separately under "Stone."

[4]Includes gem stones and sand and gravel (construction, 1982) that cannot be assigned to specific counties and values indicated by symbol W.

[5]Data do not add to total shown because of independent rounding.

Table 3.—Indicators of Alabama business activity

		1982[r]	1983	1984[p]
Employment and labor force, annual average:				
Population	thousands	3,941	3,961	3,990
Total civilian labor force	do.	1,713	1,758	1,794
Unemployment	do.	247	240	200
Employment (nonagricultural):				
Mining total[1]	do.	16.1	13.7	14.4
Nonmetallic minerals except fuels[2]	do.	2.2	2.1	NA
Coal mining	do.	11.7	9.7	10.0
Oil and gas extraction[2]	do.	1.9	1.7	NA
Manufacturing total	do.	337.8	340.9	358.4
Primary metal industries	do.	29.6	24.8	26.4
Stone, clay, and glass products	do.	8.6	8.7	8.8
Chemicals and allied products	do.	13.1	11.8	11.9
Petroleum and coal products[2]	do.	1.4	1.4	NA
Construction	do.	56.8	59.8	64.5
Transportation and public utilities	do.	71.1	69.7	72.1
Wholesale and retail trade	do.	267.4	273.2	290.3
Finance, insurance, real estate	do.	58.8	59.9	62.6
Services	do.	214.4	218.9	227.4
Government and government enterprises	do.	290.1	292.7	293.8
Total	do.	1,312.5	1,328.8	1,383.5
Personal income:				
Total	millions	$34,191	$36,436	$39,869
Per capita		$8,675	$9,200	$9,992
Hours and earnings:				
Total average weekly hours, production workers		38.5	40.7	41.0
Mining		38.8	41.4	42.6
Total average hourly average earnings, production workers		$7.33	$7.58	$7.97
Mining		$11.85	$12.50	$13.18
Earnings by industry:				
Farm income	millions	$579	$496	$706
Nonfarm	do.	$23,305	$25,095	$27,529
Mining total	do.	$508	$435	$492
Nonmetallic minerals except fuels	do.	$46	$46	$54
Coal mining	do.	$407	W	W
Oil and gas extraction	do.	$60	$48	$55
Manufacturing total	do.	$6,408	$6,884	$7,707
Primary metal industries	do.	$842	$730	$820
Stone, clay, and glass products	do.	$178	$192	$205
Chemicals and allied products	do.	$362	$348	$379
Petroleum and coal products	do.	$46	$50	$55
Construction	do.	$1,188	$1,265	$1,371
Transportation and public utilities	do.	$1,892	$2,036	$2,171
Wholesale and retail trade	do.	$3,501	$3,762	$4,197
Finance, insurance, real estate	do.	$1,035	$1,180	$1,315
Services	do.	$3,563	$3,951	$4,353
Government and government enterprises	do.	$5,116	$5,477	$5,806
Construction activity:				
Number of private and public residential units authorized		9,011	17,732	14,736
Value of nonresidential construction	millions	$393.2	$539.6	$738.4
Value of State road contract awards	do.	$211.8	$232.0	$290.7
Shipments of portland and masonry cement to and within the State	thousand short tons	994	1,173	1,298
Nonfuel mineral production value:				
Total crude mineral value	millions	$299.2	$361.3	$409.8
Value per capita		$76	$92	$103

[p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data.

[1]Bureau of Labor Statistics, U.S. Department of Labor; totals may not add because of inclusion of data from other sources.

[2]Bureau of Economic Analysis, Regional Economic Measurement Division, U.S. Department of Commerce.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

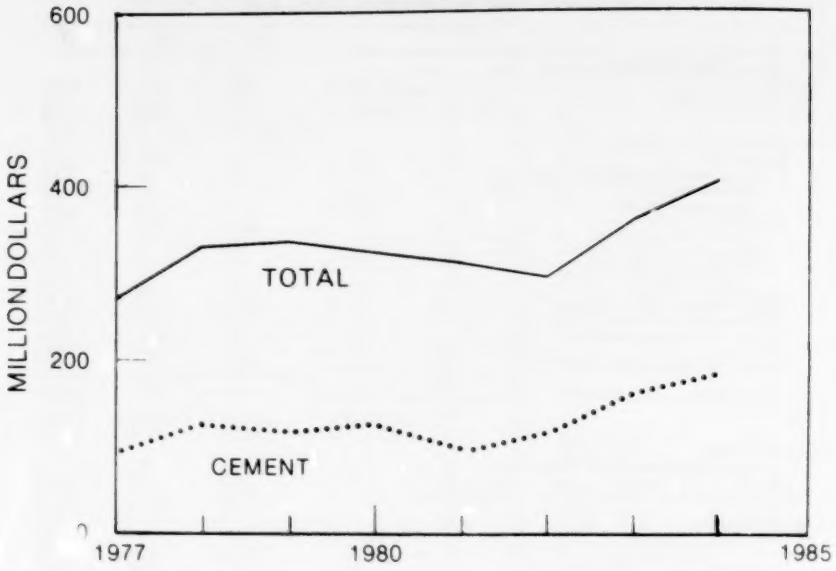

Figure 1.—Value of cement and total value of nonfuel mineral production in Alabama.

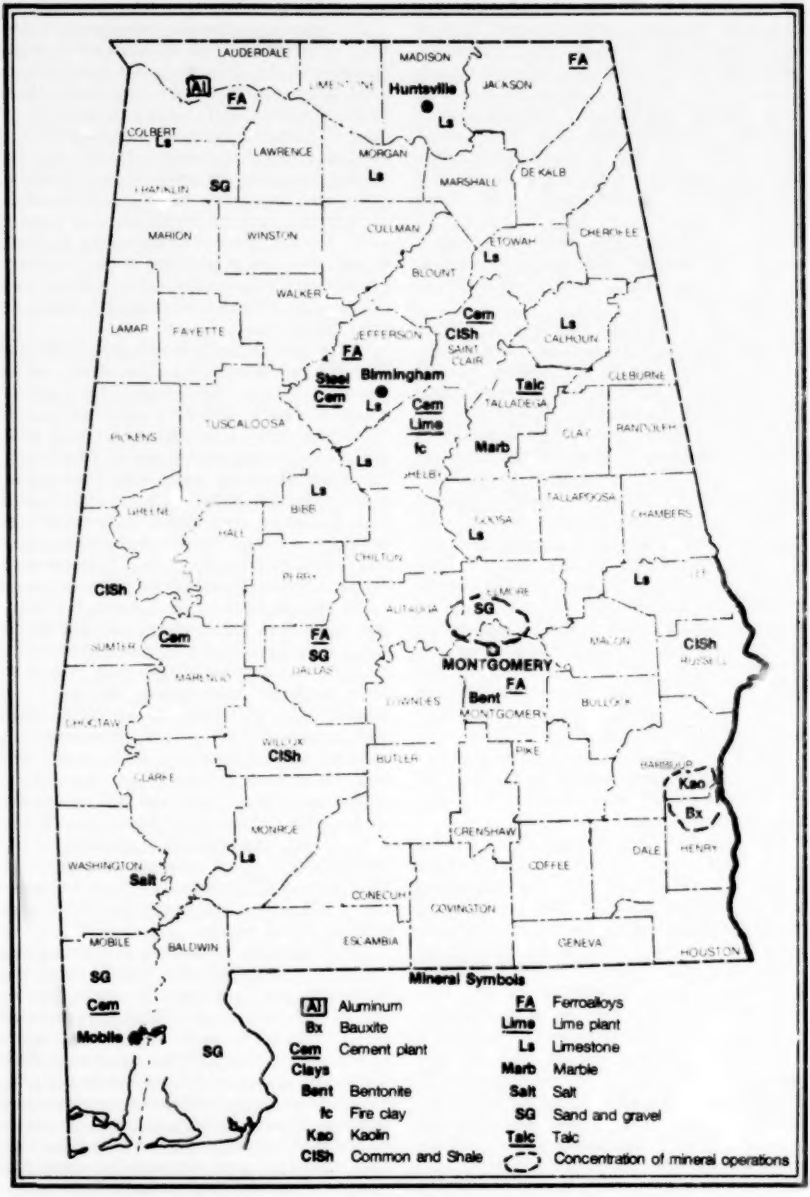

Figure 2.—Principal mineral producing localities in Alabama.

Trends and Developments.—A moderate economic recovery, which started late in 1983, continued through 1984, impacting positively on the nonfuels minerals sector. Construction activities increased resulting in a mining employment increase and a reduced unemployment rate, the lowest since 1981. The key to sustained activity will be in highway repair and surfacing and nonresidential construction. The State Highway Department plans to spend $1.6 billion in roadbuilding over the next 5 years. At yearend, Alabama's unemployment rate was 11.6%, down from 12.8% at yearend 1983.

Alabama's economic recovery has been less spectacular than that of other Southeastern States because of the State's closer link to heavy industries, which are susceptible to import competition. The State's unemployment rate, even after 2 years of decline, remained well above the national rate of 7.1%. The uncertainties in the steel and aluminum industries held economic conditions depressed to some degree. Alabama's overall economy is more sensitive to the negative effects of the dollar's high value, resulting in slower growth, which directly affected the mineral industry. The primary metals industry had an increase in employment but the number of jobs remained well below the 1979 peak year.[3] The value of public works construction permits for treatment plants, bridges, and public buildings more than doubled in 1984, with much of the actual construction to begin in 1985. The increased activity in the nonfuel minerals industry was expected to carry over to some extent through 1985.

The Alabama Development Office (ADO), in its 1984 report on new and expanding industries, announced 154 new operations and expansions totaling $259.1 million in mineral-related fields as follows: bituminous coal mining, 2 expansions with a total investment of $370,000; oil and gas, 2 expansions with a total investment of $3.1 million; mining and quarrying of nonmetallic minerals, 1 new operation and 8 expansions with a total investment of $4.1 million; petroleum refining, 1 new operation and 13 expansions with a total investment of $13.7 million; stone, clay, glass, and concrete products, 3 new operations and 47 expansions with a total investment of $59.1 million; and primary metals, 2 new operations and 75 expansions with a total investment of $178.7 million. The number of expansions and total value were slightly higher than announced for 1983.

To assist in economic development, the State historically has encouraged foreign investment. In 1971, 6 foreign-based firms were in operation, but by 1984, more than 70 were present with a total investment of over $2 billion. Countries involved in the nonfuel mineral or related fields were the United Kingdom (cement, lime, industrial gases, and chemicals), the Federal Republic of Germany (cement, ferroalloys, and chemicals), France (cement and precious metals), Japan (steel and aluminum fabrication), Switzerland (chemicals), the Netherlands (chemicals), Mexico (ferroalloys), and Austria (chemicals).

The Alabama State Docks at the Port of Mobile handled over 24 million short tons of material during fiscal year 1984, an increase of nearly 500,000 tons over that of fiscal year 1983. Increases in activity were mainly at the coal export plant and the bulk materials handling plant. The coal export plant, although exporting 8.9 million tons of coal, fell short of projected figures. Recent expansions raised the throughput capacity to 23 million tons annually. Expansions of the bulk materials handling plant included a new rail car dump, dock, reworked storage pad, and a new conveyor system. The major commodity handled was iron ore with over 2 million tons handled. Other bulk raw minerals included manganese (36,143 tons), ilmenite (85,522 tons), rutile (22,026 tons), and potash (207,034 tons). The port also handled cement, gypsum, shell, stone, and sand and gravel. New facilities for handling potash were leased from the Aluminum Co. of America (Alcoa). The Dead Sea Works Ltd., Israel, invested $1.3 million in the facilities to store potash destined for Mississippi Chemical Corp.'s plant in Pascagoula, MS. Plans call for up to 300,000 tons to be imported yearly.

The Tennessee-Tombigbee Waterway was basically completed with the tie-in of the Tennessee and Tombigbee Rivers in December. Barge traffic on the $2 billion waterway was scheduled to begin in January 1985. The Alabama State Docks spent over $230 million to upgrade and expand facilities to handle the expected increase of exports and imports. Minerals and products expected to be shipped through the waterway include coal, metallic ores, nonmetallic ores, primary metals, fabricated metals, clays, cement, and stone. Various mineral producers along the waterway were developing plans to utilize the waterway to reduce costs or

develop new market areas.

The Department of Industrial Relations reported that coal production for fiscal year 1984 increased nearly 15% to over 26 million tons. Of the operations, 20 were underground and 154 were surface mines; 5 produced over 1 million tons. Of the total output, 2.7 million tons was used to produce nearly 2 million tons of coke. Alabama coal miners signed a new agreement in August without a strike, the first time a strike did not occur in 18 years.

The State's primary metal industries, although not operating near capacity, started recovery during 1984. United States Steel Corp.'s Fairfield Works, closed since mid-1982, started up early in the year to provide steel to its new seamless pipe plant. Other facilities, including its tin mill, returned to production during the year. LTV Corp., after merging with Republic Steel Corp., agreed to sell its Gulf States Steel Corp. facility at Gadsden. The plant operated at reduced levels, and by yearend, had not been sold. SMI Steel Inc. converted the Connors Steel Co. facilities to a minimill and started operation early in the year. Tuscaloosa Steel Corp. started construction of a $75 million minimill in Tuscaloosa. The 600,000-ton-per-year facility was scheduled to be operational late in 1985. Alabama's aluminum facilities were adversely affected by depressed markets and high energy costs. Reynolds Metals Co., Listerhill, reopened two potlines during the year after being inactive during 1983; closure of one potline was announced late in the year. Revere Copper & Brass Inc., Scottsboro, remained closed during the year. Revere sold its aluminum sheet rolling mill late in the year to Noranda Inc. as part of Revere's reorganization process. The mill produces about 75,000 tons of sheet per year, mainly for the construction industry. Depressed markets and high levels of imports also impacted on the State's foundry and ferroalloy industries. Autlan Manganese Corp., Mobile, permanently shut down its silicomanganese plant because of the depressed steel industry and imports.

Texasgulf Minerals & Metals Inc. started operations in September at its $5 million plasma smelting facility in Anniston. The plant recovers platinum-group metals from automotive exhaust emission catalytic converters. The plant is expected to process 7 million pounds of catalysts annually, producing about 500,000 troy ounces of platinum, 15,000 troy ounces of palladium, and some rhodium.

Sunbelt Chemicals Inc., Atmore, a manufacturer of agricultural and industrial sulfur, announced plans to produce liquid sulfur for the pulp and paper industry. The $500,000 expansion was scheduled for completion early in 1985. Triangle Energy and Chemical Inc. announced plans to build a plant in Troy for the production of emulsified sulfur. The $600,000 project was scheduled for completion late in the year.

Employment.—Alabama's average unemployment rate for 1984 was 11.1%, down from 13.7% in 1983. Total employment in the State increased about 5% over that of 1983. Total mineral industry employment increased slightly; both mining and quarrying and coal mining shared in the increase. In mineral-related fields, employment in the stone, clay, and glass sectors increased along with that of the primary metals sector.

Legislation and Government Programs.—The Geological Survey of Alabama (GSA) continued comprehensive programs, which included assessment of the mineral, energy, and water resources of the State to determine their quality, character, and capacity for development. GSA provided resource information and evaluations to other State agencies to assist with the acquisition of baseline data upon which sound regulatory decisions could be made. GSA maintained a geochemistry laboratory, a comprehensive earth-science library, a well-cuttings and core sample library, and a geocartographic division, which in 1984 published 50 reports.

Water resource investigations were continued on watersheds in the Warrior Coal Field, the aquifers of southeast Alabama, saltwater encroachment in coastal Alabama, and the influence of coalbed methane development on ground water supplies. Cooperative studies were conducted with the Tennessee Valley Authority (TVA) and the U.S. Geological Survey (USGS). Mineral resource studies were completed on the gibbsite and limestone resources of the State. A report on mica was completed as an initial report in the mineral atlas series. Two reports of the mineral and energy resources of the State were published in the special map series, and fieldwork was begun on studies of carbonate rocks and cobalt-bearing manganese. Energy resource studies included collection of samples of various coalbeds, an inventory of the State's underground coal mines, and a compilation

of all available data on Alabama's lignite. Environmental research included the collection of baseline data for utilization in mineral and energy resource investigations. GSA continued progress on its new State geologic map by revising and upgrading existing maps. Work in the Appalachian Plateaus and Interior Low Plateaus was completed and was initiated for the Coastal Plain and Piedmont provinces.

The responsibility of the State Lands Division of the Department of Conservation and Natural Resources is to manage State-owned lands that are not being used for specific purposes. The division has six nonfuel mineral leases in State rivers and Mobile Bay. Royalty rates ranged from 22 to 26 cents per cubic yard of sand and gravel; royalty rates for oyster shell were 30 cents per cubic yard. In fiscal year 1984, royalty payments for sand and gravel were $200,000, up from $125,000 in 1983; oyster shell royalties were nearly $40,000. In August, State representatives received 58 bids for oil and gas leases to State-owned submerged lands in Mobile Bay, Mississippi Sound, and the Gulf of Mexico. The 18 high bids accepted netted the State nearly $350 million.

TVA's ammonia-from-coal facility at Muscle Shoals successfully completed a run on coal liquefaction residue. About 4,000 tons of residue produced at Baytown, TX, was used to demonstrate production of synthesis gas. TVA's operations were to demonstrate that the carbon in the residue could be converted to usable gaseous products.

The Mineral Resource Institute of the University of Alabama at Tuscaloosa received funding from the U.S. Bureau of Mines during fiscal year 1984 to encourage the training of mining engineers and other scientists involved in mineral-related studies and to continue the research in mineral exploration, mining, processing, utilization, and conservation. Primary emphases were on energy-related projects, but nonfuel research was also conducted on metallic and nonmetallic mineral resources. Ongoing work included oil shale characterization and beneficiation, study of crib design for coal mine roof control, flotation studies of various minerals, and a study of the Alabama tin belt. Publications during the year included a bibliography on surface mine blasting and an investigation of the effects of surface blasting on underground mine roof stability.

USGS continued its cooperative agreement with GSA in regard to water resource investigations. In the State, USGS continued to work on manganese resources, studies of the origins of natural gas, petrology and reservoir characteristics of deeply buried clastic rocks, geology of bitumen deposits, and gulf coast lignite. USGS published Professional Paper 1300, "Wilderness Mineral Potential." Included in the report were three areas in the State: Adams Gap and Shinbone Creek Roadless Areas; Big Sandy, West Elliotts Creek, and Reed Brake Roadless Areas; and Sipsey Wilderness and Additions These studies were prepared in cooperation with the U.S. Bureau of Mines.

In fiscal year 1984, the U.S. Bureau of Mines had several contracts in the State. Wyle Laboratories and Aaberg & Associates, Huntsville, were recipients of nine contracts totaling over $600,000. Research activities centered on noise control, machine redesign concepts, and coal interface detector investigations. The GSA had a small contract to assess the cobalt-bearing manganese deposits in the Alabama Piedmont.

The U.S. Bureau of Mines Tuscaloosa Research Center conducted several mineral-related projects in Alabama. Among them were (1) recycling of zircon from investment casting molds, (2) development of chemical binders to increase mine roof stability, (3) dewatering of coal-clay wastes, and (4) basic clay testing in cooperation with various State agencies. Report of Investigation (RI) 8910, "Centrifugally Cast Glass-Ceramic Pipe From Mining and Processing Wastes," was the result of research at Tuscaloosa. Other selected publications pertinent to the State included RI 8868, "In-Line Aeration and Treatment of Acid Mine Drainage," and Information Circular 8992, "Use of Steel Sets in Underground Coal."

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Nonmetals accounted for the bulk of the value of Alabama's total nonfuel mineral production. Construction minerals output increased primarily because of increased construction activity. Increase in primary metals and automotive output had a positive effect on other nonfuel minerals in the State.

Abrasives (Manufactured).—Artificial abrasives were manufactured by one company in Madison County. Abrasive-grade, high-purity fused aluminum oxide and alu-

minum zirconium oxide were produced by Norton Co. in Huntsville.

Cement.—Cement accounted for over one-third of the value of nonmetallic minerals produced in Alabama, with both masonry and portland cements being produced. Nationally, Alabama ranked fifth and sixth in the production of masonry and portland cement, respectively. Production and value of both types of cement increased, with portland production reaching its highest level in over 10 years. Unit prices of portland cement decreased while that of masonry cement increased.

Portland cement was produced at six plants in Alabama, two in Jefferson County and one each in Marengo, Mobile, St. Clair, and Shelby Counties. Five plants used the dry process while Allied Products Co. used the wet process. The six companies operated eight kilns with a total daily clinker capacity of 13,800 tons. Seven plants produced masonry cement, with Cheney Lime & Cement Co. being one of two plants nationally that produced masonry cement exclusively. The record high output was achieved despite a month-long strike and lengthy maintenance shutdowns at some plants. Of the six companies operating, four are owned by foreign companies. Major end uses for portland cement were concrete products, ready-mixed concrete, building materials, and highway construction. Principal raw materials used in making cement included cement rock, chalk, clays, gypsum, iron ore, limestone, sand, and shale; coal was also used as a fuel.

Ideal Basic Industries Inc. curtailed kiln operations at its plant in Theodore to complete an $18 million program to improve efficiency. The shutdown was expected to last until mid-1985 with deliveries being made from inventories and purchased supplies. Since its opening in 1982, the plant, with the exception of a brief period in 1984, has operated at only 60% of its 1.5-million-ton-per-year capacity. High moisture content in the limestone from Ideal's quarry near Monroeville was cited as the major reason for low production. Modifications included a second raw mill system, changes in rotary drying, and the addition of a secondary crushing system. Ideal was also negotiating to acquire limestone from the Dominican Republic where it would install a primary crushing system. The drier limestone would allow Ideal to increase capacity to 1.6 million tons per year and reduce fuel costs by 40% with payback anticipated on the $18 million project in less than 2 years. The Monroeville quarry would be maintained on a standby basis.

Lehigh Portland Cement Co., Leeds, underwent considerable modification and renovation work over the last 2 years at a cost of $15 million. Modifications increased kiln capacity from 1,800 to 2,000 tons per day. Lehigh is presently buying a portion of its clay requirements with plans to develop its own clay pit within the next 2 years. Improvements in 1984 included a new grinding mill and clay handling facilities on the quarry floor to mix clay with stone.

Blue Circle Inc., Roberta, was utilizing petroleum coke from the Chicago area to supplement fuel needs. The coke was mixed at a rate of 45% to 55% coal in Blue Circle's kilns. Fuel costs were reportedly reduced about 15 to 20 cents per million British thermal units.

National Cement Co. Inc., Ragland, announced a $4 million expansion program through ADO.

Lohja Corp. of Finland acquired Southern Ready Mix Inc., Alabama's largest producer of ready-mixed concrete. Southern has five plants in Birmingham, four in Mobile, three in Baldwin County, a stone operation in Calera, and a sand and gravel operation in Selma.

Table 4.—Alabama: Masonry cement salient statistics

(Short tons unless otherwise specified)

	1983	1984
Number of active plants	5	7
Production	205,121	236,274
Shipments from mills:		
Quantity	210,394	258,831
Value	$13,416,694	$17,247,161
Stocks at mills, Dec. 31	27,692	29,341

Table 5.—Alabama: Portland cement salient statistics

(Short tons unless otherwise specified)

	1983	1984
Number of active plants	6	6
Production	3,195,141	3,677,767
Shipments from mills:		
Quantity	3,279,393	3,656,445
Value	$150,254,922	$167,191,212
Stocks at mills, Dec. 31	367,119	389,730

Clays.—The State's clay industry produced common clay, fire clay, bentonite, and kaolin. Output and value of total clays increased and paralleled the rise in economic activity in the State and region. Alabama ranked third nationally in the production of fire clay and kaolin, and fourth in bentonite. Clays ranked fourth in mineral value in Alabama in 1984 as 22 companies mined clay at 38 pits in 18 counties.

Common clay was mined by 14 companies at 21 pits in 13 counties. Leading counties were Jefferson, Russell, and Sumter. Production and value decreased; major uses were brick, cement, and concrete block.

Henry Brick Co., Selma, was in the third phase of its modernization program with a clay preparation project. The company contracted with Agemac to build a $1 million clay preparation facility for raw material storage and preparation equipment. The first two phases of modernization were conversion of the two plants from gas to wood chips as fuel; the third phase, the preparation project, was scheduled for completion early in 1985.

N. K. Industries Inc. announced the opening of a $600,000 crushing and grinding plant at Phenix City. The facility will custom grind chromite and manganese ores for the brick industry. Five companies announced expansions through ADO totaling nearly $3 million. Two of the companies were producers of refractory clay.

Vulcan Materials Co.'s Parkwood lightweight aggregate plant operated at about 50% capacity, closing late in 1984 with scheduled reopening in April 1985. Competing lightweight aggregate plants in Alabama, Georgia, Mississippi, and Tennessee have restricted Vulcan's market area.

Fire clay was mined by four companies at six pits in Calhoun, St. Clair, and Shelby Counties. Production increased slightly while value decreased. American Colloid Co. mined bentonite at its operation in Lowndes County for use in drilling muds and the foundry industry; production increased. The company operated three pits where the material was dried, crushed, and shipped to markets nationwide. Of the two kilns in operation, one was gas fired and the other was converted to coal and/or wood.

Kaolin was mined by 3 companies at 10 pits in Barbour and Henry Counties. Production and value increased significantly. Major uses were in firebrick and other refractories. Kaolin occurs in association with bauxite, which was also used for refractory purposes. Mining companies continued to operate at reduced levels during the year.

Fluorspar.—International Minerals & Chemical Corp. operated a fluosilicic acid plant at Florence. 3M Corp.'s Specialty Chemicals Div. operated a plant at Decatur, brought on-stream in 1983, to manufacture chemical-resistant products for the rubber industry. The company manufactured a fluoroelastomer used in nonmetallic ducting-system expansion joints for pollution control and a general purpose gumstock without curatives.

Lime.—Alabama ranked fifth nationally in the production of lime, which was the third leading commodity, valuewise, produced in the State in 1984. Production increased and exceeded 1 million short tons for the first time since 1981. Lime was produced by four companies in five plants in Shelby County. Both quicklime and hydrated lime output increased with unit values also increasing. Production increased as demand in the steel and paper industries and for use in sewage and industrial waste treatment increased. One of Allied's two plants, closed during 1983, reopened in mid-1984 to meet demand. The Longview plant of S. I. Lime Co. was the eighth leading plant in total output in 1984.

Table 6.—Alabama: Lime sold or used by producers, by use

Use	1983		1984	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
Paper and pulp	218,457	$9,402	371,450	$15,937
Water purification	208,808	7,699	176,742	7,599
Sewage treatment	53,114	2,679	77,078	3,954
Road and soil stabilization	27,884	1,162	25,239	1,071
Sugar refining	W	W	10,851	642
Other[1]	r473,192	r20,207	501,956	21,357
Total	981,455	41,149	1,163,316	50,560

rRevised. W Withheld to avoid disclosing company proprietary data.

[1]Includes acid water neutralization, agriculture, alkalies (1984), animal and human food, aluminum and bauxite, basic oxygen steel, coke and gas (1983), copper ore concentration (1983), electric steel, fertilizer (1984), finishing lime (1984), magnesia from seawater or brine, mason's lime, open-hearth steel (1984), other ore concentration (1983), other chemical and industrial uses, other construction lime (1984), petroleum refining, rubber (1984), sulfur removal from stack gases, tanning, and use indicated by symbol W.

Mullite (Synthetic).—Synthetic mullite was produced by Harbison-Walker Refractories Co. Inc. at Eufaula. The output, a high-temperature sintered variety, was used primarily for the manufacture of refractories, with demand increasing as the operation level of the steel industry increased. Production and value were estimated to have increased with unit value also increasing. Synthetic mullite is a product of sintering a mixture of aluminous and siliceous material.

Nitrogen.—TVA, Muscle Shoals, and U.S.S. Agri-Chemicals Inc., Cherokee, produced anhydrous ammonia. TVA's plant had an annual capacity of 74,000 short tons, while U.S.S. Agri-Chemicals had a capacity of 175,000 short tons. The Alabama Directory of Mining and Manufacturers also listed Estech Corp. in Dothan and Hercules Inc. in Bessemer as having anhydrous ammonia in its product line.

Perlite (Expanded).—Two plants, W. R. Grace & Co., Birmingham, and National Gypsum Co., Mobile, expanded perlite from ore shipped in from the Western United States. Production and value decreased 29% and 20%, respectively. The expanded perlite was used for formed products, horticulture purposes, and concrete aggregate.

Salt.—Alabama ranked 10th nationally in the production of salt. Olin Corp., in Washington County, produced salt from brine wells by solution mining a near-surface salt dome. Olin produces three basic products, chlorine, sodium hydroxide, and sodium chlorate, at the facility. Production and value of salt increased with a slight increase in unit value. The salt was used in chemical manufacture, chiefly caustic soda, chlorinated organics, and sodium chlorate and hypochlorite. Olin announced it would convert to membrane cells using technology licensed from Kanegafuchi Chemical Industry of Japan. A portion of the solid salt produced was shipped to Olin's chloralkali plant in Augusta, GA.

Sand and Gravel.—Alabama produced both construction and industrial sand and gravel in 1984. Production was from 72 companies producing from 86 operations in 32 counties. Total output increased over that of 1983, but it was still below the record high output during the late 1970's.

Both construction and industrial sand and gravel were shipped into Georgia, mainly the Atlanta area. Eight sand and five gravel operations have met the Georgia Department of Transportation (DOT) requirements for use of materials in DOT projects. The majority of these approved operations are in the Montgomery area.

Construction.—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; therefore, this chapter contains only estimates for 1983. Data for odd-numbered years are based on annual company estimates made before yearend.

Table 7.—Alabama: Construction sand and gravel sold or used in 1984, by major use category

Use	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregate	4,447	$12,362	$2.78
Plaster and gunite sands	W	W	2.96
Concrete products	232	697	3.01
Asphaltic concrete	585	1,279	2.19
Road base and coverings	1,558	3,559	2.29
Fill	227	267	1.18
Snow and ice control	W	W	3.70
Other[1]	3,301	8,024	2.43
Total or average	[2]10,348	26,188	2.53

W Withheld to avoid disclosing company proprietary data; included with "Other."
[1]Includes roofing granules, other unspecified uses, and uses indicated by symbol W.
[2]Data do not add to total shown because of independent rounding.

Construction sand and gravel was the fifth leading commodity in value among the nonfuel minerals produced in Alabama. The increase in 1984 was basically due to a surge in construction activities, mainly highway work; residential construction decreased in the last 6 months of the year. Many sand and gravel facilities operated intermittently during the year, depending on proximity and extent of area construction activities. Most operations were relatively small with no individual pit producing more than 1.5 million short tons. Construction sand and gravel was produced at 83 operations in 31 counties. Leading counties were Montgomery, Mobile, Elmore, and Macon. The major portion of sand and gravel was shipped by truck, with lesser amounts transported by rail and water. The top 20 companies, with 29 operations, produced 75% of the construction sand and gravel. Three sand and gravel operations announced expansion plans through ADO totaling $300,000.

Industrial.—Five companies produced industrial sand and gravel with output increasing. Industrial sand and gravel was used primarily by foundries for molds and cores. Production for use at silicon alloy plants increased as Ohio Ferro-Alloys Corp. started up its third furnace late in the year. All industrial sand and gravel producers were relatively small with individual output under 200,000 short tons per year.

Slag—Iron and Steel.—Alabama was 1 of 22 States that reported processing and utilization of iron and steel slag. Jim Walter Resources Inc., Birmingham, and Vulcan, Fairfield and Gadsden, air-cooled blast furnace slag, which is typically used as road base, railroad ballast, and asphaltic concrete aggregate. Vulcan sold steel slag for similar uses. Total output and value increased 14.6% and 17.9%, respectively, over that of 1983. Output of iron slag decreased while that of steel slag increased, with unit values of both increasing.

Stone.—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; therefore, this chapter contains only estimates for 1984. Data for even-numbered years are based on annual company estimates made before yearend.

Crushed.—Crushed stone ranked second in mineral value in Alabama with output estimated to have increased over that of 1983. Kinds of stone mined included limestone, dolomite, marble, and granite. Alabama led the Nation in 1983 in output of crushed marble. Crushed stone was used primarily in cement manufacture, in concrete, and as a road base. Leading producing counties in 1983 were Shelby, Jefferson, and Colbert. The Alabama Department of Industrial Relations estimates that in fiscal year ending September 30, 1984, about 28.7 million short tons of crushed stone was produced; nine quarries produced in excess of 1 million tons. Most companies increased output because of increased construction activities; several remained closed or operated intermittently because construction activities were out of their marketing areas. Ideal put its Perdue Hill quarry on standby because of high moisture content and plans to import stone from the Dominican Republic for use in its cement plant at Theodore. Vulcan, the major crushed stone producer in the State with 12 operations, purchased Citadel Cement Corp.'s quarry in Birmingham and another in Madison County. Vulcan plans to develop another quarry in the Childersburg area. Southern Stone Co. Inc., the second largest producer in the State, increased output because of increased demand for construction and highway work. Southern began importing aggregates from Mexico and the Caribbean area to expand its product line to include high-quality lime aggregates.

The conversion of the domestic paper industry to alkaline sizing impacted favorably on the marble industry in Sylacauga. Georgia Marble Co. has ultrafine grinding facilities at Tate, GA, for use in the paper industry. Moretti-Harrah Marble Co. completed a $7 million fine and ultrafine grinding facility during the year to meet the needs of the paper industry. The company initiated a major drilling program to delineate reserves for the next 20 years. Although dimension marble was also produced, 85% of its output was from the calcium carbonate operations. Thompson-Weinman Co. completed its ultrafine grinding facility early in the year and produced material for the paper industry. With expansions at several facilities, the market for ultrafine material was becoming very competitive. ADO reported four other expansions at crushed stone operations totaling over $1 million.

Dimension.—Production of dimension stone increased slightly with value remaining at about the same level as that of 1983. Alabama ranked fourth nationally in output of dimension marble. Marble was quarried in Talladega County, limestone was

mined from an underground operation in Franklin County, and sandstone was quarried in Blount County. Moretti-Harrah, Sylacauga, was modernizing its dimension marble plant, mainly through automation and more modern equipment. Scheduled to go on-stream late in December, the plant will produce small items such as floor tile; large monumental finishing will continue to be done by other companies. Alabama Limestone Inc., Franklin County, was one of the top producers of dimension limestone in the Nation.

Sulfur (Recovered).—Alabama ranked fifth nationally in output of recovered sulfur. Two companies recovered sulfur from natural gas processing plants in Escambia and Washington Counties. Two other companies recovered sulfur from petroleum refineries in Mobile and Tuscaloosa Counties. Exxon Co., Hunt Oil Co., Phillips Petroleum Co., and Union Oil Co. sold 380,000 metric tons valued at $34.5 million, a decrease of about 5% in quantity and value from that of 1983, the second straight year of decreased output. Construction started on a $12 million gas separation plant in Washington County with completion scheduled for late in the year. The Coillet Oil Venture Co.'s facility in Copeland will be operated by Panther Hydrocarbon Corp. The plant, utilizing the cryogenic process, will have a capacity of 114 tons per day of sulfur.

Talc.—Cyprus Industrial Minerals Co. ground talc from out of State at its plant near Alpine; output and unit prices increased over that of 1983. The product was used primarily in paper, cosmetics, paint, plastic, rubber, and ceramics.

Vermiculite (Exfoliated).—W. R. Grace & Co., Jefferson County, exfoliated vermiculite at its plant in Irondale from crude ore shipped into Alabama. Primary uses were in concrete aggregate, block, loose fill insulation, and as a sand conditioner. Production and value increased over that of 1983.

METALS

Primary metal production was one of the most important industries in the State. Most of the State's adverse economic conditions can be traced to a downward trend in the metals industry, which started in 1979 and continued into 1984. The national recession and imports contributed to the decline in activities in the metals industry. The industry in Alabama consists of aluminum, ferroalloys, steel, and various foundries, with aluminum being impacted more than the others.

Aluminum.—Alabama was 1 of 17 States with primary aluminum production facilities. Two companies, Revere in Scottsboro and Reynolds in Sheffield, have facilities for producing aluminum. Reynolds operated at a reduced level while Revere was shut down for the second straight year. Both facilities were considered high unit cost operations because of power costs. Reynolds restarted one potline early in the year and a second in March, resulting in an operating rate of about 40%. Discounted electric rates, increased demand, and decreased inventories prompted the decision. Late in the year, Reynolds announced one potline would be shut down early in 1985. Reynolds completed shutdown of its aging wire, rod, and bar operations in March, and announced completion of the $14 million modernization and renovation of its five-stand cold-rolling mill. Reynolds' Southern Reclamation Co. started construction of a $10 million, 50,000-ton-per-year secondary aluminum smelting and refining plant. The construction, which includes renovation and installation of new equipment at the old Union Carbide facility, was scheduled for completion in 1985. Revere, closed since 1982, sold its rolling mill at Scottsboro to Noranda as part of Revere's reorganization process. Revere, which filed for protection from its creditors under chapter 11 of the Bankruptcy Code, indicated the sale was expected to be completed in January 1985. Noranda was expected to ship ingots from its smelter in New Madrid, MO, to the 75,000-ton-per-year rolling mill. At midyear, Revere announced that the bankruptcy court approved settlement of suits with TVA and Alcoa. Under the settlements, TVA will be allowed claims of $32.2 million for power contracts, and Alcoa, $20 million for alumina contracts.

Ford Motor Co., Sheffield, rejected an offer to sell its idle aluminum casting plant to Accurate Die-Casting Co. of Cleveland, OH. The plant was closed in 1983 because of high operating costs.

Kaiser Aluminum & Chemical Corp. reopened its wire and cable plant in Bay Minette after a 90-day shutdown because of wage renegotiations. A negotiated settlement guarantees the plant will remain open for at least 2 years. The agreement called for a reduction in wages and benefits. Alcoa permanently closed its alumina facility at Mobile during the year resulting in a $41 million write-down. The plant had been idle since early 1982 owing to an oversupply of

alumina and high operating costs at the facility.

Bauxite.—Alabama ranked second nationally in bauxite production. Four companies mined bauxite in Barbour and Henry Counties for use in refractories and chemical manufacture. Production and value increased to some extent but still remained at very low levels; unit prices increased. All producers operated intermittently and at low levels of capacity during 1984. Dresser Industries Inc., Eufaula, which completed its ceramic proppant plant late in 1983, produced proppants from bauxitic clays. The proppants were used in the petroleum industry in oil well development.

Ferroalloys.—Alabama ranked fourth nationally in shipments of ferroalloys, with output and value increasing 9.6% and 23.2%, respectively. Although increasing, output still was well below levels in the late 1970's. Products included ferrosilicon, silicomanganese, and silicon metal. During the year, many of the ferroalloy plants remained closed or operated at reduced levels. Autlan, which ceased production in July 1982, permanently closed its silicomanganese plant in Mobile. Cited as primary reason for the shutdown was low-priced imports. The closure caused a permanent loss of about 20% of the Nation's silicomanganese capacity.

Pickands Mather & Co. purchased Interlake Inc.'s Globe Metallurgical Div. for $37 million. Globe operated a 22,000-ton-per-year silicon metal plant at Selma. Globe announced a $157,000 expansion project at its Selma facility. Ohio Ferro-Alloys closed its Philo, OH, plant to concentrate its efforts on silicon metal production at its Mount Meigs plant near Montgomery. The Mount Meigs facility operated two furnaces utilizing gravel mined locally. Late in the year, the company started up its third furnace, mainly to meet the demand previously supplied by the closed facility in Ohio. The company produced a chemical-grade silicon metal and a higher calcium-grade material for the aluminum industry. The Mount Meigs facility is the newest and reportedly the most efficient of the company's plants. The shift away from ferroalloy production was caused by low-priced imports from Brazil and the U.S.S.R.

Gold.—Developments in Alabama were generally restricted to recreational gold mining with some exploration by various corporations. Several thousand acres have been leased by individuals and mineral companies in Cleburne County. Other counties reporting leasing were Clay, Randolph, Talladega, and Tallapoosa, mostly in areas of old abandoned base metal mines. Some drilling has been done with no reported results.

Iron and Steel.—Alabama was 1 of 12 States that produced pig iron; shipments more than doubled over that of 1983 along with an increase in unit values. Gulf States Steel, Gadsden, and U.S. Steel, Fairfield, were the major iron and steel companies.

U.S. Steel started up its new 600,000-ton-per-year seamless pipe mill at Fairfield using blooms from Armco Inc.'s Ashland, KY, plant. During the year, the mill was shut down on two occasions owing to lack of orders; cited was the report that 70% of the seamless domestic market was supplied by imports. U.S. Steel restarted its smaller No. 7 blast furnace and two basic oxygen furnaces early in the year, down since mid-1982, to supply the new pipe mill. The company's tin mill, also closed since mid-1982, was reopened in November. Reasons cited were that Fairfield steelworks produced more steel than it used and that the tin mill had a double cold-rolled reduction mill that gave it a wider product mix. The company announced late in the year that the No. 8 blast furnace would be started up early in 1985, replacing the smaller No. 7 blast furnace. The coke oven remained shut down with plans to reopen in 1985. Construction of a new $200 million continuous slab caster was expected to begin early in 1985 with scheduled completion in 1986. During the last 10 years, U.S. Steel has expended more than $1.3 billion to modernize facilities at Fairfield. Recent additions included the seamless pipe mill, a continuous bloom caster, a 5,000-ton-per-day blast furnace, and three Q-bops. With the addition of the new continuous caster in 1986, the plant will be able to feed its flat-rolled finishing operations as well as its pipe-making operations. Fairfield has a capacity of 3 million tons per year, but this level of operations is not expected in the near future.

LTV, which merged with Republic Steel early in the year, continued efforts to divest itself of the Gadsden operations by December 1 as decreed by a Federal court. At midyear, the plant was operating its plate and hot strip mills on alternate 2-week schedules. LTV, unable to divest itself of the plant by the deadline, formed a new independent company, Gulf States Steel, to run

the operations. In addition, Oppenheimer & Co. was appointed trustee to handle the sale of the facilities. A State legislative panel was appointed to assist officials in finding a new owner. Among interested parties was the local United Steelworkers of America union, which hired a consultant to conduct a feasibility study to determine the possibility of partial ownership. The Gadsden Works produced carbon and high-strength, low-alloy hot plate and sheet. The plant reportedly lost $46.6 million in 1983 and $22.0 million in 1984; the last profitable year was 1981. Shipments increased from 674,000 tons in 1983 to 711,000 tons in 1984.

SMI announced a startup early in the year of the former Connors Steel facility in Birmingham as a minimill. SMI will produce about 250,000 tons per year of carbon steel. The melt shop started operations in March; the rolling mill started up in April. The plant operated at two turns at yearend with plans to go to three turns in 1985. SMI concluded a $9 million long-term Industrial Development Revenue Bond agreement to modernize and upgrade facilities.

Tuscaloosa Steel began construction of a 600,000-ton-per-year flat roll minimill in Tuscaloosa. The $75 million facility was scheduled for completion by early 1986. The facility will have the capability to produce hot-rolled products of varying sizes, grades, and widths. A key element in the project will be a 112-inch wide, coiled plate mill. High-quality semifinished slab will be imported for use at the facility; reportedly, the slab is not available in the United States.

Mitsubishi International Corp., a subsidiary of Mitsubishi Corp. of Japan, planned to open a $5 million steel processing facility at Athens by yearend. The facility will process about 80,000 tons of coiled steel per year with about 20% going to Japanese firms in the area.

Ferrous Foundries.—Iron and steel foundries were a vital industry that affected mineral producers in the State and region. Most foundries, however, have been adversely affected by poor economic conditions. Raw materials utilized included scrap, clay, limestone, and sand, most of which came from sources in the region. The Alabama Directory of Mining and Manufacturing listed 43 gray iron foundries, 27 steel foundries, 8 steel investment foundries, and 2 malleable iron foundries. Alabama Ductile Iron Co. (ADICO), Brewton, and Wagner Casting Co., Decatur, IL, formed a partnership to expand ADICO's plant capacity from 12,000 to 25,000 tons per year. The $3 million project was scheduled for completion late in 1984 and will produce ductile and gray iron castings. Citation Carolina Corp., Birmingham, acquired Simsco Inc., which has three ductile iron foundries along with supporting facilities in central Alabama. Citation is also the parent company of Southern Ductile Casting Co. of Bessemer. ADO announced 18 other expansion projects at foundries in Alabama in 1984. Total expenditures for the projects was reportedly $15.5 million.

Rutile (Synthetic).—Kerr-McGee Corp., Mobile, operated its synthetic rutile plant with output shipped to Hamilton, MS, for processing to titanium dioxide pigments. Ilmenite from Australia was used as feed material for the synthetic rutile plant; about 85,000 short tons was imported through the Port of Mobile. The plant has a capacity of 110,000 tons per year.

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[1]State Mineral Officer, Bureau of Mines, Tuscaloosa, AL.

[2]State geologist, Geological Survey of Alabama, Tuscaloosa, AL.

[3]Federal Reserve Bank of Atlanta. Economic Review. Feb. 1985, pp. 58-68.

Table 8.—Principal producers

Commodity and company	Address	Type of activity	County
Aluminum smelters:			
Revere Copper & Brass Inc	Box 191 Rome, NY 13440	Plant	Jackson.
Reynolds Metals Co	Reynolds Metals Bldg. Richmond, VA 23218	do	Colbert.
Bauxite:			
A. P. Green Refractories Co.,[1] a subsidiary of United States Gypsum Co.	Mexico, MO 65265	Mine and plant	Barbour.
Harbison-Walker Refractories Co. Inc.,[2] a division of Dresser Industries Inc.	Dale Rd. Route 1, Box 58 Eufaula, AL 36027	do	Barbour and Henry.
Mullite Co. of America	901 East 8th Ave. King of Prussia, PA 19406	Mine	Henry.
Cement:			
Allied Products Co.[3]	Box 36130 Birmingham, AL 35236	Plant	Jefferson.
Blue Circle Inc.[4]	18th Floor, Daniel Bldg. Birmingham, AL 35233	do	Shelby.
Citadel Cement Corp	2625 Cumberland Pkwy. NW. Atlanta, GA 30339	do	Marengo.
Ideal Basic Industries Inc.[4]	950 17th St. Box 8789 Denver, CO 80201	Plants	Mobile.
Lehigh Portland Cement Co	800 2d Ave., South Leeds, AL 35094	Plant	Jefferson.
National Cement Co. Inc	Drawer A Ragland, AL 35131	do	St. Clair.
Clays:			
Bickerstaff Clay Products Co. Inc	Box 517 Bessemer, AL 35020	Mines	Jefferson and Russell.
Blue Circle Inc	18th Floor, Daniel Bldg. Birmingham, AL 35233	Mine	Shelby.
Jenkins Brick Co	Box 91 Montgomery, AL 37101	Mines	Chilton and Elmore.
Tombigbee Lightweight Aggregate Corp., a division of Breeko Industries Inc.	Box V Livingston, AL 35470	Mine	Sumter.
Ferroalloys:			
Moore McCormack Resources Inc., Globe Metallurgical Div.	Box 348 Selma, AL 36701	Electric furnace	Dallas.
International Minerals & Chemical Corp., TAC Alloys Div.	Garner Rd. Bridgeport, AL 35740	do	Jackson.
Ohio Ferro-Alloys Corp	Box 68 Montgomery, AL 36057	do	Montgomery.
Reynolds Metals Co	Box 191 Sheffield, AL 35660	do	Colbert.
Lime:			
Allied Products Co	Box 36130 Birmingham, AL 35236	Plants	Shelby.
Blue Circle Inc.[4]	18th Floor, Daniel Bldg. Birmingham, AL 35233	Plant	Do.
Cheney Lime & Cement Co	Allgood, AL 35013	do	Do.
S. I. Lime Co	Suite 204 Three Riverchase Office Plaza Birmingham, AL 35244	do	Do.
Pig iron:			
Jim Walter Resources Inc	330 1st Ave., North Birmingham, AL 35202	Furnaces	Jefferson.
Gulf States Steel Corp	174 South 26th St. Gadsden, AL 35901	Furnaces and mills.	Etowah and Jefferson.
United States Steel Corp	Box 599 Fairfield, AL 35064	do	Jefferson.
Salt:			
Olin Corp	120 Long Ridge Rd. Stamford, CT 06904	Brine wells	Washington.
Sand and gravel:			
Holland and Woodward Co. Inc	Box 1947 Decatur, AL 35601	Surface mine and plant.	Franklin.
R & S Materials Inc	Box 3547 Montgomery, AL 36109	Surface mines and plants.	Autauga, Elmore, Macon, Montgomery.
Southern Industries, Radcliff Materials.	Drawer 2068 Mobile, AL 36601	do	Mobile and Montgomery.
C. T. Thackston	Box 3211 Montgomery, AL 36109	Surface mine and plant.	Montgomery.

See footnotes at end of table.

Table 8.—Principal producers —Continued

Commodity and company	Address	Type of activity	County
Stone:			
Allied Products Co	Box 628 Alabaster, AL 35007	Quarries	Shelby.
Hoover Inc	Box 17346 Nashville, TN 37217	do	Colbert and Jackson.
Ideal Basic Industries Inc	950 17th St. Box 8789 Denver, CO 80201	Quarry	Monroe.
Southern Stone Co. Inc.[3]	Box C-200 Birmingham, AL 35283	Quarries	Bibb, Colbert, Lee, Shelby.
Vulcan Materials Co.[6]	Box 7324-A Birmingham, AL 35253	do	Calhoun, Colbert, Etowah, Franklin, Jackson, Madison, Shelby.
Talc:			
Cyprus Industrial Minerals Co	Alpine, AL 35014	Plant	Talladega.

[1]Also kaolin.
[2]Also kaolin and synthetic mullite.
[3]Also lime.
[4]Also clays and stone.
[5]Also sand and gravel.
[6]Also clays and sand and gravel.

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